PROJECT: SAMS	STETCH. D. C. MINER
ASS'Y NOMENCLATURE: ROTATIONAL HAND COLTROLLER	STSTEM: Dac SUBSYSTEM ASS'T P/N: STTSSET17
FATLURE EFFECT   ROLLE 7 FIRE	H33 1 F/M: 31133E111

REF. REV.	DAME DTY E FAILURE HOD DRAWING REF. AND CAUSE	OH	ROUR / FUNC. ASS'Y P/N: STISSETT SHEET:
ARED BY: MEMG	VERNIER/ COARSE SWITCH GTV-1 P/M NS27717-23  CAUSE(S): (1) SWITCH SHORE CIRCUIT. (2) POLE FAILS TD COARSE (10V).	CONTINUOUS 10V SIGNAL. COARSE WILE BE SELECTED IN GPC. IF IN VERNIER ARM VILL RESPOND INPN.E. INSTEAD OF VERNIER. COULD GET SUDDEN CHANGE TO COARSE MEEN DRIVING IN VERNIER. MORST CASE UNEMPECTED MOTION. UNEMPECTED COARSE RATES. UNANHUNCIATED. CREW ACTION REQ. REDUMDANT PATHS REMAINING N/A	CRITICALITY  DESIGN FEATURES  THE VERNIER/COARSE SUITCH IS A TOGGLE - ACTUATED SWITCH, TYPE MSZ7717-23, QUALIFIED TO HIL-S-83731.  REPRESENTATIVE SWITCHES AND ACTUATORS WERE LIFE TESTED FOR SRMS USE.  THIS TEST WAS CONDUCTED BY NOUNTING THE SWITCHES IN A REPRESENTATIVE HAND GRIP FRAME. TESTING INCLUDED - RANDOM VIBRATION TO GOVE LEVELS AND OPERATING LIFE TESTS TO 10000 CYCLES (\$000 BEFORE VIBRATION, AND 5000 POST-VIBRATION) CONTACT RESISTANCE, AND ACTUATOR DEWATING FORCES. FOR SWITCH OPERATIONAL CYCLES REFER TO TABLE 13.  SOLDERED COMMECTIONS TO THE SWITCHES ARE POTTED TO AFFORD STRAIN RELIEF, AND PROTECTION ACAINST SHOOT CIRCUIT.  THE PROCUREMENT SPECIFICATION FOR THE SWITCH INCLUDES THE REQUIREMENT FOR DPA ON SAMPLES FROM EACH DELIVERED LOT.

RMS/D&C - 371

PROJECT: SRMS ASS'Y NOMENCEATURE: ROTATIONAL MAND CONTROLLER

STSTEM: DAC SUBSTSTEM ASS'Y PAR: STISSETTY MARE TOTY, E-FAILURE RODE REF. REV. DRAWING REF. TATEURE EFFECT AND DESIGNATION ON CAUSE END ITEM RATIONALE FOR ACCEPTANCE CRITICALITY 1480 VERNIER/ MODE: 1 COARSE CONTINUOUS 10V CONTINUOUS SIGNAL, COARSE SUITCH OTT-1 COARSE SEFECIED IN AILT BE THE RHC IS SUBJECTED TO THE FOLLOWING ACCEPTANCE ENVIRONMENTAL COMMANDS. MS27717-23 GPC. IF IN CAUSE(\$): VERNIER ARM O VIBRATION: LEVEL AND DURATION REFERENCE TABLE 1 (1) SWITCH SHORT WILL RESPOND IN COARSE INSTEAD CIRCUIT. O THERMAL: +120 DEGREES F TO 20 DEGREES F (12 HRS PER OF VERNIER. COULD GET CYCLE) 2 CYCLES TOTAL. (2) POLE FAILS 10 SUDDEN CHANGE THE RHC IS TESTED AS PART OF THE DEC SUBSYSTEM; WHICH CONSIST TO COARSE WHEN OF ORC PAREL, INC AND RHC; PER IP 347. COARSE (10V). DRIVING IN VERNIER. THE TOTAL DAC SUBSYSTEM UNDERGOES AND SYSTEM TESTING, CIP 518 AMS STRONGBACK, AND IPSSE FLAT FLOOR TESTS) WHICH VERIFIES THE MORST CASE UNEXPECTED QUALIFICATIONS TESTS HOTION. UNEXPECTED THE BNC IS CERTIFIED BY SIMILARITY TO THE ORBITER USED RHC EXCEPT FOR FINGER OPERATED SMITCHES. THE BASIC DIFFERENCES COARSE RATES. UNANNUNCIATED. IS THAT THE ORBITER AND IS TRIPLE REDUNDANT AND THE AMS AND CREW ACTION REQ. REDUNDANT PATHS FLIGHT CHECKOUT REMAINING PDRS OPS CHECKLIST (ALL VEHICLES) JSC 16987 N/A PREPARID BY: MENG SUPERCEDING DATE: 11 SEP No.

RMS/D&C - 372

OJECT: SRHS -	
Cly nonfine allow the section of the contract	SUBSYSTEM

tf. REV.	DRAWING REF. DESIGNATION	FARLURE HODE ' AND CAUSE	TAILURE EFFECT ON END ITEM	HOUR / FUNCT PATIONALE FOR ACCEPTANCE CRITICALITY
(490 ()	VERNIER/ COARSE SWITCH GIY-1 P/M MS27717-23	MODE: CONTINUOUS, COARSE COMMANDS.  CAUSE(S): (1) SMITCH SHORT CIRCUIT. (2) POLE FAILS TO COARSE (16V).	CONTINUOUS 10V SIGNAL COARSE WILL BE SELECTED IN GPC. IF IN VERNIER ARM WILL RESPOND IN COARSE INSTEAD OF VERNIER. COULD GET SUDDEN CHANGE TO COARSE WHEN DRIVING IN VERNIER. WARST CASE WHENPECTED MOTION. UNEXPECTED COARSE RATES. UHAMMUNCHATED. CREW ACTION REG. REDUNDANT PATHS MERALHING	TOGGLE SWITCHES ARE PROCURED TO MS27717 AS REQUIRED BY HONEYWELL DRAWING NO. 1007/199. SWITCHES ARE GUALFFIED AND SCREENED TO THE REQUIREM NI. OF MILES BAT31 AND DRAWING NO. 1007/199. SWITCHES ARE GUALFFIED AND 1006/199. DUALFFICATION TESTING OF SMITCHES WAS PERFORMED TO THE REQUIREMENTS OF NOMEYWELL IEST PROCEDURE NO. SWITCHES DAYS PROFESSION. THE SWITCH MECHANISMS AND SWITCHES SUCCESSFULLY COMPLETED 10.000 CYCLES OF THE SWITCH MECHANISMS AND SWITCHES SUCCESSFULLY COMPLETED 11 THE GAVI AND FLIGHT VIERATION REQUIREMENTS OF CAR SPECIFICATION PS 37027.31. PRIOR TO ANY SWITCH CYCLING OR VIBRATION, SWITCH MECHANISMS AND SWITCHES WERE GUYEN A PUNCTIONAL PERFORMANCE IEST ON THE SSKIC IEST CONSOLE. DETAILED 1EST RESULTS ARE COVERED IN MONEYWELL TEST REPORT NO. ARM 777-039. MASA APPROVAL OF SWITCHES IS UNDER HSPAR 4092 AND MSPAR 4093.  WIRE 1S PROCURED TO SPECIFICATION MILE M-22759 OR MILEM-61381 AND INSPECTED AND TESTED TO HASA JSCHOODS STANDARD MEMBER 95A. RECEIVING IMSPECTION VERIFIES THAT SWITCHES RECEIVED ARE AS IDENTIFIED IN THE PROCUREMENT DOCUMENTS, THAT NO PHYSICAL DANAGE ANS OCCURRED TO SWITCHES SWITCH STANDARD WAS APPROVED TO HASA JSCHOODS STANDARD MIRE AS APPROVED TO HASA JSCHOODS STANDARD MEMBER 95A. AND ACCEPTANCE TEST DATA IDENTIFIES CACEPTABLE PARTS.  RECEIVING IMSPECTION VERIFIES THAT SWITCHES RECEIVED ARE AS IDENTIFIED TO THE MANIFACTURING STAGE COMPLETED. THESE PARTS AND ACCEPTANCE TEST DATA IDENTIFIES ACCEPTABLE PARTS.  PARTS ARE INSPECTED THROUGHOUT MANUFACTURE AND ASSEMBLY AS APPROPRIATE TO THE MANIFACTURING STAGE COMPLETED. THESE AND ACCEPTANCE TEST DATA IDENTIFIES ACCEPTABLE PARTS.  PARTS ARE INSPECTED THROUGHOUT MANUFACTURE AND ASSEMBLY AS APPROPRIATE TO NASA WHO SSOO, 4(3A) STANDARD, AS MODIFIED BY JSC OBBODA.  PRE-CLOSUME INSPECTION, MORKMANSHIP AND CLEANLINESS (CAE/GOVERNMENT REP. MANDATORY INSPECTION POINT)  A TEST READINESS REVIEW (IRR) WHICH INCLUDES VERIFICATION OF THE START OF ANY FORMAL TESTING (ACCEPTANCE OR QUALIFICATION).  ALEST READINES REVIEW (IRR) WHICH INCLUDES AN AMBIENT PREFOR

RMS/D&C - 373

PROJECT: SRMS
REPORTED THAT JONAL HAND CONTROLLER

SYSTEM: DAC SUBSYSTEM ASS'Y P/H: STISSETTY

NAME, CTY, E-DRAWING BEF. FATEURE RODE TAILURE EFFECT HOUR 7 FUNCT AEI. REV. AND RATIONALE FOR ACCEPTANCE DESIGNATION CAUSE END FIEH CRITICALITY 1480 -0 VERNIER/ MODE: CONTINUOUS 10V COARSE CONTINUOUS SAMS SYSIEMS INTEGRATION, THE INTEGRATION OF MECHANICAL ARM SUBASSEMBLIES AND THE FLIGHT CABIN EQUIPMENT TO FORM THE SRMS. INSPECTIOMS ARE PERFORMED AT EACH PHASE OF INTEGRATION WHICH INCLUDES GROUNDING CHECKS, THRU MIRING CHECKS, MIRING ROUTING, INTERFACE CONNECTORS FOR BENT OR PUSH BACK CONTACTS ETC. SIGNAL. COARSE SWITCH QTY-1 COARSE WILL BE CONTANDS. SELECTED IN HS27717-23 GPC. IF IN CAUSE(S): VERNIER ARM (1) SULTCH WILL RESPOND IN SRMS SYSTEMS TESTING - STRONGBACK AND FLAT FLOOR AMBIENT PERFORMANCE TEST. (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION COARSE INSTEAD CIRCUIT. OF VERNEER. COULD GET (2) POLE SUDDEN CHANGE FAILS TO TO COARSE WHEN DRIVING IN VERNIER. COARSE (10V). WORST CASE UNEXPECTED MOTION. UNEXPECTED COARSE MATES. UNAHNUNCIATED. CREW ACTION REQ. REDUNDANT PATHS REMAINING H/A

PREPARED BY: MFUG SUPERCEDING DATE: 11 SEP 86 APPROVE

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PREPARED BY: MENG

SUPERCEDING DATE: 11 SEP. 86

PROJECT: SRMS ASS'Y NOMENCLATURE: <u>MOTATIONAL HAND CONTROLLER</u> SYSTEM: DEC SUBSYSTEM ASS'Y P/N: \$1155E117 FHEA. DRAWING REF. FAILURE HODE FAILURE EFFECT AET. REV. AND ON DESIGNATION CAUSE RATIONALE FOR ACCEPTANCE END ITEM CRITICALITY 1480 Ð VERNIER/ COARSE MODE: CONTINUOUS CONTINUOUS FOY SIGNAL. COARSE FAILURE HISTORY SWLTCH GIY-1 COARSE WILL BE P/N COMMANDS. SELECTED IN THERE HAVE BEEN NO FAILURES ASSOCIATED WITH THIS FAILURE MODE ON THE SAMS PROGRAM. MS27717-23 CAUSE(S): VERNIER ARM (1) SWITCH SHORT WILL RESPOND IN COARSE INSTEAD OF VERNIER. CIRCUIT. COULD GET SUDDEN CHANGE TO COARSE WHEN (2) POLE FAILS TO COARSE (10V). DRIVING IN VERNIER. MORST CASE UNEXPECTED HOTION. UHENPECTED COARSE RATES. UNAMHUNCFATED. CREW ACTION REDUNDANT PATHS REMAINING N/A

APPROVED BY:

DATE:

PROJECT: SANS ASS'Y MOMERCLATURE: <u>ROYATTONAL HAND CONTROLLER</u>

SYSTEM: DAC SUBSYSTEM ASS'Y P/N: 51155E117

ee: 10

VERNIER/ CORREST SUITCH GTY-1 PRS27717-23  CAUSE(S): (1) SUITCH SHORT CIRCUIT. (2) POLE COMBIER AND COMBINER COMBIER COMBIER COULD GET SUBDER CHANGE COASE INSTEAD OF VERNIER COULD GET SUBDER CHANGE (1009).  WORST CASE UNEXPECTED MOTION.  WILL RESPOND IN COMPANDS. IT IN UNIT HE ARM IS RESPONDING PROPERTY TO COMPANDS. UNEXPECTED MOTION.  MISSION CONTRIBUTE  THE COMPAND OF LINE CHARGE IN THE COMPANDS. IT IS USEN IT HE ARM IS RESPONDING PROPERTY TO COMPANDS. UNEXPECTED MOTION.  MISSION CONTRIBUTE  THE COMPAND COMPANDS FOR MATES. AT ANY TIME WHILE IN THE ARM HILL OPERATE WITH COARSE RATES AT ANY TIME WHILE IN THE COMPAND FOR THE MATE.  THE ARM HILL OPERATE WITH COARSE RATES AT ANY TIME WHILE IN THE ARM HILL OPERATE WITH COARSE RATES AT ANY TIME WHILE IN THE ARM HILL OPERATE WITH COARSE CHARGE IN THE COMPANDS FOR MATES. THE COMPAND OF COMPANDS IN THE COMPAND OF C	FREA REF.	REV.	NAME OTY 6 DRAWING RÉF. DESIGNATION	FAILURE HODE AND CAUSE	FAILURE EFFECT ON END ITEN	HDWR / FUNC.  1/1 RATIONALE FOR ACCEPTANCE  CRITICALITY
VERIFY COARSE COMMAND CONTINUITY  OHRSD ONLINE INSTALLATION  HOHE  OHRSD ONLINE TURNAROUND  SET VERNIER/COARSE SWITCH TO VERNIER  VERIFY RATE NIN TALKBACK ON	1480		COARSE SHITCH QTY-I F/N	CONTINUOUS -COARSE -COMMANDS.  CAUSE(S): (1) SWITCH SHORT CINCUIT. (2) POLE FAILS TO COARSE	SIGNAL, COARSE MILL BE SELECTED IN GPC, IF IN VERNIER ARN MILL RESPOND IN COARSE INSTEAD OF VERNIER, COULD GET SUDDER CHANGE TO COARSE WHEN DEIVING IR VERNIER, WORST CASE UNEXPECTED MOTION, UNEXPECTED COARSE RATES, UNANNUNCHATED, CREW ACTION REQ. REDUNDANT PATHS REHAINING	THE ARM MILL OPERATE WITH COARSE RATES AT ANY TIME WHILE IN A COMPUSER SUPPORTED HODE. CREM INHERENTLY COMPENSATES FOR CHANCE IN RATE.  CREM ACTION  REDUCE HAND CONTROLLER COMMANDS FOR MANUAL AUGMENTED MODES. FOR SINGLE MODE THE SUITCH HAY BE LUGGLED TO ACHIEVE REDUCED NATES. FOR AUTO MODES, APPLY BRAKES OBSERVE WHETHER THE ARM IS RESPONDING PROPERLY TO COMMANDS. IF IT ISN'T THE COMMAND SHOULD BE REMOVED.  MISSION CONSTRAINT  THE OPERATOR MUST BE ABLE TO DETECT THAT THE ARM IS RESPONDING PROPERLY TO COMMANDS VIA WINDOW AND/OR CCTV VIEWS DURING ALL OPERATIONS.  SCREEN FAILURES  N/A  OHRSD OFFLINE  SET WERNIER/COARSE SWITCH TO WERNIER VERIFY COARSE COMMAND CONTINUITY.  OHRSD ONLINE INSTALLATION  MONE  OHRSD ONLINE TURNAROUND

PREPARED BY: WING

SUPERCEDING DATE: 06 OCT 67

APPROVED

RMS/D&C - 376

ME: